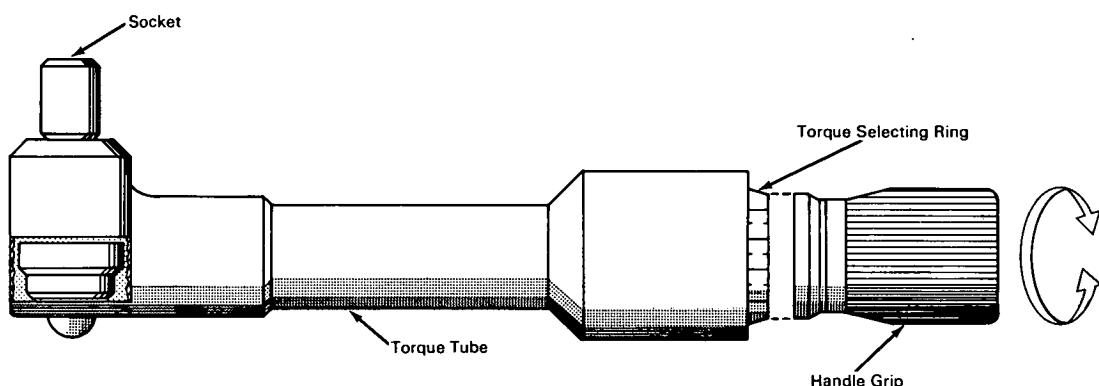


# NASA TECH BRIEF



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## Torque Wrench Designed for Restricted Areas



### **The problem:**

To apply a given amount of torque to a fastener in a restricted area. In certain applications, wrenches that employ straight-line leverage to apply torque cannot be swung in the necessary arc. In other applications, restricted areas make it impossible to read the torque indicator on the handle.

### **The solution:**

A wrench that applies torque when the handle grip is twisted, much like the application of the throttle on a conventional motorcycle handlebar. The wrench handle length may be any length without affecting output torque since it is not used as a moment arm.

### **How it's done:**

The input torque is applied by twisting the handle grip which is connected to an output worm gear through an adjustable, torque limiting slip clutch. A torque tube transmits the force through the grip and is supported by radial and thrust bearings to maintain proper alignment of the gears. A conventional worm gear in the tool head drives a worm wheel with a short shaft that engages the socket for tightening

the fastener. A torque-selection ring on the handle grip is set to the desired value and it adjusts the release point of the slip clutch.

### **Notes:**

1. Maximum output torque for this device is approximately 300 inch-pounds.
2. Inquiries concerning this innovation may be directed to:

Technology Utilization Officer  
Lewis Research Center  
21000 Brookpark Road  
Cleveland, Ohio, 44135  
Reference: B66-10011

### **Patent status:**

No patent action is contemplated by NASA.

Source: E. Russell Fagerberg of  
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Lewis Research Center  
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Category 05